

AppendixClaims on Appeal

22. An interconnect structure in which an anti-fuse dielectric is formed therein comprising:

a substrate having a first level of electrically conductive features;

a patterned anti-fuse dielectric layer formed on said substrate, wherein said patterned anti-fuse dielectric layer includes an opening to at least one of said first level of electrically conductive features;

a patterned interlevel dielectric material formed on said patterned anti-fuse dielectric layer, wherein said patterned interlevel dielectric includes vias, at least one of said vias has a via space formed above said opening and at least one other of said vias exposes a portion of said anti-fuse layer to define an anti-fuse location; and

a second level of electrically conductive features formed in said vias and via space(s) where the electrically conductive feature of said second level at said at least one of said vias forms an electrical interconnect between said first and second levels of electrically conductive features and where the electrically conductive feature of said second level at said at least one other of said vias defines an anti-fuse between said first and second levels with said exposed portion of said antifuse layer.

23. The interconnect structure of Claim 22 wherein said substrate is composed of an interlevel dielectric material that is the same or different from said patterned interlevel dielectric material.
24. The interconnect structure of Claim 22 wherein said patterned interlevel dielectric material is composed of an inorganic semiconductor material selected from the group consisting of SiO_2 , Si_3N_4 , diamond, diamond-like carbon and fluorinated doped oxides.
25. The interconnect structure of Claim 22 wherein said patterned interlevel dielectric material is composed of an organic dielectric material selected from the group consisting of polyimides, polyamides, paralyene and polymethylmethacrylate.
26. The interconnect structure of Claim 22 wherein said first and second levels of electrically conductive features are composed of the same or different conductive metal selected from the group consisting of aluminum, tungsten, copper, chromium, gold, platinum, palladium and alloys, mixtures and complexes thereof.
27. The interconnect structure of Claim 22 wherein said anti-fuse dielectric layer is a dielectric material selected from the group consisting of SiO_2 , Si_3N_4 , Si oxynitrides, amorphous Si, amorphous C, H-containing dielectrics, carbon, germanium, selenium, compound semiconductors, ceramics and anti-reflective coatings.
28. The interconnect structure of Claim 27 wherein said anti-reflective coating is silicon oxynitride.

29. The interconnect structure of Claim 22 wherein another interconnect level is formed over said patterned interlevel dielectric layer.

30. The interconnect structure of Claim 29 wherein said another interconnect level includes a tapered metal contact region.
